UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/533,196	04/28/2005	Toshiyuki Amagasa	2005-0718A	9014

513 7590 11/29/2006

WENDEROTH, LIND & PONACK, L.L.P.
2033 K STREET N. W.
SUITE 800
WASHINGTON, DC 20006-1021

EXAMINER	
PRESTON, ERIK D	

ART UNIT	PAPER NUMBER
2834	

DATE MAILED: 11/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/533,196	AMAGASA, TOSHIYUKI	
	Examiner	Art Unit	
	Erik D. Preston	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 September 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21-54* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21-54* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/20/2006 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 21-36,38, 41-43,49 & 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Breynaert et al. (WO 01/79787, previously cited) in view of Baader et al. (US 5954258 previously cited) in view of Blanchet (US 5723924).

With respect to claim 21, Breynaert teaches a motor unit comprising: A motor (Fig. 1, #1) including a speed reduction mechanism (Fig. 1, #3) including an output shaft (as seen in Fig. 1); a case frame (Fig. 1, #20) containing said speed reduction mechanism; a cover assembly (Fig. 1, #30) fitted to an upper side of said case frame and containing a drive control section (Fig. 1, #5) having a control circuit for driving said motor and a power supply circuit (English language equivalent: US 6998741, Col. 3,

Lines 6-18), but it does not teach said drive control section including a first circuit component containing section arranged at said base end of said output shaft along a longitudinal axis of said output shaft; a second circuit component containing section arranged at said base end of said output shaft along a longitudinal axis of said output shaft and farther from said base end than said first circuit component containing section, said first circuit component containing section being arranged in a three-dimensional manner so as to be stacked one above the other with respect to an upper and lower direction, and so as to be located at an upper side of said speed reduction mechanism; and a connecting line arranged between said first circuit component containing section and said second component containing section. However, Baader teaches a drive control section (Fig. 1, #31) including a first circuit component containing section (Fig. 2, #43); a second circuit component containing section (Fig. 2, #55), said first circuit component containing section being arranged in a three-dimensional manner so as to be stacked one above the other; and a connecting line (Fig. 2, #58) arranged between said first circuit component containing section and said second component containing section; and Blanchet teaches that electrical circuits (Fig. 2, #7-11) can be disposed at a base end of an output shaft (Fig. 2, #15) of a speed reduction mechanism. It would have been obvious to one of ordinary skill in the art at the time of the invention to:

1) modify the drive control section of Breynaert in view of the two compartment drive control section as taught by Baader because it provides a means for keeping the electrical components of a drive control section at an acceptable level of heat while also

allowing a very compact arrangement of the components to be realized (Baader, Col. 1, Line 32-Col 3, Line 31), and

2) position the circuit component sections of Breynaert and Baader in view of the circuit mounting position as taught by Blanchet because it provides an equivalent and equally well know position for mounting electrical circuit components to a motor and reduction gear assembly. It is also noted that it would have been obvious to one of ordinary skill in the art at the time of the invention to position the circuit component sections of Breynaert and Baader in view of the circuit mounting position as taught by Blanchet since it has been held that changing the position of an element of an invention is prima facie obvious in the absence of new or unexpected results (In re Japikse, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950)).

With respect to claim 22, Breynaert in view of Baader in view of Blanchet teaches the motor unit of claim 21, and Baader teaches that said first circuit component containing section includes a printed wiring board, and the second circuit component containing section includes circuit components electrically connected to the printed wiring board through the connecting line (as seen in Fig. 2).

With respect to claim 23, Breynaert in view of Baader in view of Blanchet teaches the motor of claim 22, and Baader teaches that the printed wiring board and the circuit components in said second circuit component section are arranged substantially in parallel with each other, said connecting line being interposed between them (as seen in Fig. 2).

With respect to claim 24, Breynaert in view of Baader in view of Blanchet teaches the motor of claim 21, and Baader teaches that signal system circuit components are arranged in the first circuit containing section and power system components are arranged in the second circuit component containing section.

With respect to claim 25, Breynaert in view of Baader in view of Blanchet teaches the motor of claim 24, and Baader teaches that the power system components are directly mounted on the connecting line (as seen in Fig. 2).

With respect to claim 26, Breynaert in view of Baader in view of Blanchet teaches the motor of claim 21, and Baader teaches that a printed wiring board arranged in said first circuit component containing section and said second circuit component containing section, said signal system circuit components and said power system components being mounted on said printed wiring board, an area of conductive pattern of said wiring board arranged in said first circuit component containing section (the area on the board left of the connector) being smaller than an area of conductive pattern of said wiring board arranged in said second circuit component containing section (the entire board), but it does not explicitly teach the conductive pattern being copper-foil. However, circuit boards with copper-foil conductive patterns were extremely well known at the time of the invention. It would have been obvious to one of ordinary skill in the art at the time of the invention to include a circuit board with a copper-foil conductive pattern in the invention of Baader because copper-foil is the most common material in the art used for forming conductor patterns on circuit boards, and it also would have been obvious to include a circuit board with a copper-foil conductive pattern in the invention of Baader since it has

been held that one of ordinary skill in the art at the time the invention would choose a suitable and desirable material, because it would be within the general skill of a worker in the art to select a material on the basis of its suitability for the intended use as a matter of obvious design choice (In re Leshin, 227 F.2d 197, 125 USPQ 416 (CCPA 1960)).

With respect to claim 27, Breynaert in view of Baader in view of Blanchet teaches the motor of claim 21, and Baader teaches that said second circuit component containing section is located on an upper side of said first circuit component containing section

With respect to claim 28, Breynaert in view of Baader in view of Blanchet teaches the motor of claim 21, and Baader teaches that a heat sink is included at an outer and upper side of said second circuit component containing section (as seen in Fig. 2).

With respect to claim 29, Breynaert in view of Baader in view of Blanchet teaches the motor of claim 21, and Baader teaches that said cover assembly has a two-chamber structure including a first chamber comprising said first circuit component containing section, and a second chamber comprising said second circuit component containing section (as seen in Fig. 2).

With respect to claims 30 & 31, Breynaert in view of Baader in view of Blanchet teaches the motor of claims 29 & 21, and Baader teaches that said cover assembly includes a dividing wall (Fig. 2, #44) separating said first circuit component containing section from said second circuit component containing section.

With respect to claim 32, Breynaert in view of Baader in view of Blanchet teaches the motor of claim 31, and Baader teaches that said dividing wall has a connecting hole for allowing said first circuit component containing section to communicate with said second circuit component containing section (as seen in Fig. 2).

With respect to claim 33 & 34, Breynaert in view of Baader in view of Blanchet teaches the motor of claims 32 & 31, and Baader teaches that said cover assembly further includes: a bottom case having a dividing wall, said first circuit component containing section being located between said dividing wall and said case frame; and a case cover fitted to said bottom case, said second circuit component containing section being located between said case cover and said dividing wall (as seen in Fig. 2).

With respect to claim 35, Breynaert in view of Baader in view of Blanchet teaches the motor of claim 34, and Baader teaches that power system circuit components (Fig. 2, #40) are fixed to an inner surface of said case cover.

With respect to claims 36 & 38, Breynaert in view of Baader in view of Blanchet teaches the motor of claims 35 & 34, and Baader teaches that the case cover has a plurality of fins (Fig. 2, #38) on an outer surface thereof.

With respect to claims 41 & 42, Breynaert in view of Baader in view of Blanchet teaches the motor of claim 21, and Breynaert teaches that said first circuit component containing section includes a position sensor (Fig. 1, #33) for detecting a rotation angle of a drive shaft (as seen in Fig. 1) of said speed reduction mechanism, said drive being operable to output a decelerated rotation of said motor shaft.

With respect to claim 43, Breynaert in view of Baader in view of Blanchet teaches the motor of claim 21, and Baader teaches that said connection line electrically connects circuit components contained in said first circuit component containing section to circuit components contained in said second circuit component containing section, and said connecting line is operable to absorb noise generated from said circuit components (the connecting line will inherently absorb at least a portion of the noise produced by the power semiconductors).

With respect to claim 49, Breynaert in view of Baader in view of Blanchet teaches the motor of claim 21, and Blanchet teaches that said first and second circuit component carrying sections are arranged above said output shaft (as seen in Fig. 2).

With respect to claim 52, Breynaert in view of Baader in view of Blanchet teaches the motor of claim 21, Breynaert teaches that said motor further includes a motor shaft and Blanchet teaches that said output shaft of said speed reduction mechanism is arranged orthogonally with respect to said motor shaft (as seen in Fig. 2).

Claims 37,39 & 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Breynaert et al. (WO 01/79787, previously cited) in view of Baader et al. (US 5954258, previously cited) in view of Blanchet (US 5723924) further in view of Kagaya et al (US 2003/0084677, previously cited). Breynaert in view of Baader in view of Blanchet teaches the motor of claims 35,38 & 34, and Baader teaches that the case cover is made of aluminum (Claim 12), but it does not teach that a black alumite treatment has been applied to the outer surface of the case cover. However, Kagaya teaches a radiation plate with a black alumite treatment (Paragraph 32). It would have

been obvious to one of ordinary skill in the art at the time of the invention to modify the heat sink of Baader in view of the radiation plate as taught by Kagaya because it effectively receives thermal radiation, has a high emission rate, and provides high thermal conductivity (Kagaya, Paragraph 32); and also because it has been held that one of ordinary skill in the art at the time the invention would choose a suitable and desirable material, because it would be within the general skill of a worker in the art to select a material on the basis of its suitability for the intended use as a matter of obvious design choice (In re Leshin, 227 F.2d 197, 125 USPQ 416 (CCPA 1960)).

Claims 44-48,50,51,53 & 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Breynaert et al. (WO 01/79787, previously cited) in view of Baader et al. (US 5954258, previously cited) in view of Blanchet (US 5723924) in view of Matsuyama et al. (US 6756711, previously cited).

With respect to claim 44, Breynaert teaches a motor including: a yoke (Fig. 1, #6) having a closed-bottom cylindrical shape; a permanent magnet (English equivalent, Col. 2, Lines 57-60); a motor shaft (Fig 1, #8) having a first end rotatably supported in said yoke; an armature coil wound around an armature core (English equivalent, Col. 2, Lines 61-67); a commutator (Fig. 1, #10) fixed to said motor shaft and arranged adjacent to said armature core and electrically connected to said coil; a brush (Fig. 1, #11) in slide contact with said commutator; and a brush holder for retaining said brush (as seen in Fig. 1); a speed reduction mechanism engaged with a worm (English equivalent, Col. 3, Lines 1-4) of said motor shaft to decelerate a rotation of said motor shaft and to transfer the decelerated rotation to an output shaft; a case frame connected

to said yoke and containing said speed reduction mechanism; and a cover including: a signal system circuit and a power system circuit for applying an electric current to said motor from said signal system circuit components to drive said motor said cover being arranged to face said speed reduction mechanism, but it does not teach said permanent magnet being fixed on an inner circumferential surface of said yoke, a bottom case having a first circuit component containing section arranged at said base end of said output shaft along a longitudinal axis of said output shaft, a second circuit component containing section arranged at said base end of said output shaft along a longitudinal axis of said output shaft and farther from said base end than said first circuit component containing section, a dividing wall arranged between said first circuit component containing section and said second circuit component containing section, said bottom case being arranged such that said first circuit component containing section faces said speed reduction mechanism, or a case cover fitted to said bottom case and shaped to cover said second circuit containing section. However, Baader teaches a bottom case having a first circuit component containing section, a second circuit component containing section, a dividing wall arranged between said first circuit component containing section and said second circuit component containing section, and a case cover fitted to said bottom case and shaped to cover said second circuit containing section (as seen in Fig. 2); Blanchet teaches that electrical circuits (Fig. 2, #7-11) can be disposed at a base end of an output shaft (Fig. 2, #15) of a speed reduction mechanism; and Matsuyama teaches a permanent magnet (Fig. 1, #5) being fixed on

an inner circumferential surface of a yoke (Fig. 1, #4). It would have been obvious to one of ordinary skill in the art at the time of the invention to:

1) modify the cover of Breynaert in view of the bottom case and cover as taught by Baader because it provides a means for keeping the electrical components of a drive control section at an acceptable level of heat while also allowing a very compact arrangement of the components to be realized (Baader, Col. 1, Line 32-Col 3, Line 31)

2) position the circuit component sections of Breynaert and Baader in view of the circuit mounting position as taught by Blanchet because it provides an equivalent and equally well know position for mounting electrical circuit components to a motor and reduction gear assembly, and

3) place the magnets of Breynaert on an inner circumferential surface of the yoke such as is taught by Matsuyama because that is the conventional portion of the motor yoke to which permanent magnets are attached.

With respect to claim 45, Breynaert in view of Baader in view of Blanchet in view of Matsuyama teaches the motor of claim 44, and Breynaert teaches that said first circuit component containing section includes a rotation sensor (Fig. 1, #33) for detecting the rotation of said motor shaft.

With respect to claim 46, Breynaert teaches a motor including: a yoke (Fig. 1, #6) having a closed-bottom cylindrical shape; a permanent magnet (English equivalent, Col. 2, Lines 57-60); a motor shaft (Fig 1, #8) having a first end rotatably supported in said yoke; an armature coil wound around an armature core (English equivalent, Col. 2, Lines 61-67); a commutator (Fig. 1, #10) fixed to said motor shaft and arranged

adjacent to said armature core and electrically connected to said coil; a brush (Fig. 1, #11) in slide contact with said commutator; and a brush holder for retaining said brush (as seen in Fig. 1); a speed reduction mechanism engaged with a worm (Col. 3, Lines 1-4) of said motor shaft to decelerate a rotation of said motor shaft and to transfer the decelerated rotation to an output shaft; a case frame connected to said yoke and containing said speed reduction mechanism; and a cover including: a signal system circuit including a position sensor and a power system circuit for applying an electric current to said motor from said signal system circuit components to drive said motor said cover being arranged to face said speed reduction mechanism, but it does not teach said permanent magnet being fixed on an inner circumferential surface of said yoke, a bottom case having a first circuit component containing section arranged at said base end of said output shaft along a longitudinal axis of said output shaft, a second circuit component containing section arranged at said base end of said output shaft along a longitudinal axis of said output shaft and farther from said base end than said first circuit component containing section, a dividing wall arranged between said first circuit component containing section and said second circuit component containing section, said bottom case being arranged such that said first circuit component containing section faces said speed reduction mechanism, a case cover fitted to said bottom case and shaped to cover said second circuit containing section, or the second circuit components including a FET (field effect transistor). However, Baader teaches a bottom case having a first circuit component containing section, a second circuit component containing section, a dividing wall arranged between said first circuit

component containing section and said second circuit component containing section, and a case cover fitted to said bottom case and shaped to cover said second circuit containing section (as seen in Fig. 2); Blanchet teaches that electrical circuits (Fig. 2, #7-11) can be disposed at a base end of an output shaft (Fig. 2, #15) of a speed reduction mechanism; Matsuyama teaches a permanent magnet (Fig. 1, #5) being fixed on an inner circumferential surface of a yoke (Fig. 1, #4); and FET's were extremely well known in the art at the time of the invention. It would have been obvious to one of ordinary skill in the art at the time of the invention to:

1) modify the cover of Breynaert in view of the bottom case and cover as taught by Baader because it provides a means for keeping the electrical components of a drive control section at an acceptable level of heat while also allowing a very compact arrangement of the components to be realized (Baader, Col. 1, Line 32-Col 3, Line 31)

2) position the circuit component sections of Breynaert and Baader in view of the circuit mounting position as taught by Blanchet because it provides an equivalent and equally well know position for mounting electrical circuit components to a motor and reduction gear assembly

3) place the magnets of Breynaert on an inner circumferential surface of the yoke such as is taught by Matsuyama because that is the conventional portion of the motor yoke to which permanent magnets are attached, and

4) include a FET in the power system circuit of Breynaert because FET's are one of the cheapest and most commonly used power system circuit components available in the art.

With respect to claim 47, Breynaert in view of Baader in view of Blanchet in view of Matsuyama teaches the motor of claim 46, and Breynaert teaches that said first circuit component containing section includes a rotation sensor (Fig. 1, #33) for detecting the rotation of said motor shaft.

With respect to claim 48, Breynaert in view of Baader in view of Blanchet in view of Matsuyama teaches the motor of claim 46, Baader teaches that said case cover has a heat sink; and Breynaert teaches that said position sensor of said first circuit components is operable to detect a rotation angle of both a drive shaft of the speed reduction mechanism and the rotation of said motor shaft (since both shafts are integrally connected, when the sensor detects the movement of one of the shafts, it also detects the movement of the other), it also would have been obvious to one of ordinary skill in the art at the time of the invention to include separate hall sensors to independently detect the movement of the two shafts since it has been held that the mere duplication of parts has no patentable significance unless a new and unexpected result is produced (In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960)).

With respect to claims 50 & 53, Breynaert in view of Baader in view of Blanchet in view of Matsuyama teaches the motor of claims 44 & 46, and Blanchet teaches that said first and second circuit component carrying sections are arranged above said output shaft (as seen in Fig. 2).

With respect to claims 51 & 54, Breynaert in view of Baader in view of Blanchet in view of Matsuyama teaches the motor of claims 44 & 46, Breynaert teaches that said motor further includes a motor shaft and Blanchet teaches that said output shaft of said

speed reduction mechanism is arranged orthogonally with respect to said motor shaft (as seen in Fig. 2).

Response to Arguments

Applicant's arguments with respect to claims 21-48 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 4795867, US 5632469 & US 2003/0094920

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erik D. Preston whose telephone number is (571)272-8393. The examiner can normally be reached on Monday through Friday 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on (571)272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

11/14/2006

BURTON S. MULLINS
PRIMARY EXAMINER